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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/551,272	04/18/2000	Yajun Li	04873--065002	1789

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 01/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/551,272

Applicant(s)

LI ET AL.

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17, 24, 27, 29 and 31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, 24, 27, 29 and 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 9/23/02 in Paper No. 15 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/551272 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Amendment

2. The cancellation of Claims 25-26 in Paper No. 15, dated 9/23/02, is acknowledged and accepted.

Response to Arguments

3. The Applicants argue that Reddersen et al. fails to teach or reasonably suggest the use of an axicon optical element in an imaging scanner, such as one in which an image of a bar code symbol is directed onto an imaging element (i.e. CCD). The Examiner respectfully disagrees. One skilled in the art of optics will realize that the optical element in question (i.e. the optical corrector plate 400 in Figure 15/16; See also Figures 17 and 18) comprises, as Reddersen et al. describes, a main portion and a wedge section (See col. 11, lines 10-13. It is noted that this description is given with respect to the side view shown in Figures 15 and 16; however, when the corrector plate is view along with the views shown in Figures 17 and 18, the corrector plate has the shape of a conical prism with a bore hole along the optical axis, i.e. an axicon optical element with a bore hole

along the optical axis. Therefore, Reddersen et al. specifically describes the use of an axicon optical element in an imaging scanner. However, after careful consideration of Reddersen et al., Marom et al. ('095 and '143), and Olmstead et al., the cited prior art fails to teach or reasonably suggest the collection lens, comprising an axicon optical element, collecting light reflected from the bar code symbol and directing an image of the bar code symbol onto the imaging element. The cited references, however, do teach or reasonably suggest the use of an axicon optical element for beam shaping and beam delivery of an optical beam from a source such as a laser. Therefore, the Examiner respectfully withdraws the rejections to Claims 17, 24-27, 29, and 31. Claims 17, 24, 27, 29, and 31 are now rejected as follows.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Barkan et al.

Barkan et al. discloses light collection elements for a bar code scanner (See for example Figures 7 or 11), the light collection elements positioned to collect light reflected from a bar code symbol (See 20 in Figures 7 or 11), the light collection optical elements comprising an imaging element (See 63 in Figures 7 or 11) and a collection lens (See Axicon 1 and Axicon 2 in Figures 7 or 11) for collecting light reflected from the bar

code symbol and directing an image of the bar code symbol onto the imaging element, the collection lens comprising an axicon element shaped and positioned to extend the working range over which the bar code symbol can be resolved by the imaging element. It is noted that axicon optical elements produce line images along the optical axis of the axicon with the source, and hence will focus along a range of distance along the optical axis.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barkan et al. in view of Kohayakawa or Olmstead et al.

Barkan et al. discloses the invention as set forth above in Claim 29, except for the imaging element being a CCD device. However, Kohayakawa teaches an optical scanning apparatus (See for example Figures 1 and 7 in Kohayakawa; Figure 1A of Olmstead et al.) wherein the scanned light is detected using imaging devices such as CCD's (See 10 in Figure 1, 30 in Figure 7; 104 in Figure 1A of Olmstead et al.). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the imaging element be a CCD device, as taught by

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Kohayakawa or Olmstead et al., in the light collection optical elements for a bar code scanner as disclosed by Barkan et al. One would have been motivated to do this to decrease the time required to scan the bar code image since the whole image is acquired simultaneously.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barkan et al.

Barkan et al. discloses the invention as set forth above in Claim 29, except for the axicon including a polymer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the axicon include a polymer, since it has been held to be within the ordinary skill of worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to have the axicon include a polymer for the purpose of reducing the cost and weight of the bar code scanning system.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barkan et al. in view of Olmstead et al.

Barkan et al. discloses the invention as set forth above in Claim 29, except for the collection lens including a doublet. However, Olmstead et al. discloses the use of a doublet or triplet lens in lieu of a single lens in bar code systems (See col. 16, lines 3-7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the collection lens include a doublet, as taught by Olmstead et al., in the light collection optical elements for a bar code scanner as disclosed by Barkan et al. One would have been motivated to do this to eliminate or reduce the spherical aberration in the bar code system.

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10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barkan et al. in view of Marom et al. ('143 or '095).

Barkan et al. discloses the invention as set forth above in Claim 29, except for the modulation transfer function (MTF) of the collection lens being higher with an axicon than without the axicon for bar code symbols having spatial wavelengths of 10-20 mils, inclusive. However, Marom et al. ('143 or '095) teaches that the MTF of the collection lens is higher with an axicon than without the axicon in place (See for example col. 13, line 21-col. 17, line 51). Therefore, it would have been obvious to one having ordinary skill in the art for the MTF of the collection lens to be higher with an axicon than without the axicon, as taught by Marom et al. ('143 or '095). One would have been motivated to incorporate the axicon to obtain a higher MTF for the purpose of detecting higher density and higher contrast bar code symbols.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

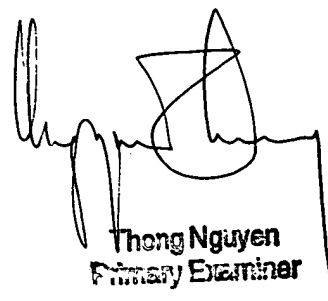
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
December 19, 2002



Thong Nguyen
Primary Examiner